What Is Claimed Is:

1. An interferometric measuring device for measuring surface characteristics, shapes, distances, distance variations, and vibrations, comprising:

a probe part;

an optical fiber;

a measuring head, wherein:

in the measuring head, at a free end of the probe part approaching a measuring object, the optical fiber projects out and corresponds to a measuring fiber for illuminating a point of measurement and for picking up a measuring light coming from the point of measurement.

2. The measuring device according to claim 1, wherein:

the surface characteristics, shapes, distances, distance variations, and vibrations are measured in narrow, hollow spaces, of the measuring object.

3. The measuring device according to claim 1, wherein:

a free end region of the measuring fiber illuminates the point of measurement and picks up the measuring light in dependence upon a measuring task.

4. The measuring device according to claim 3, wherein:

the free end region is one of polished, provided with a diaphragm, configured as one of a lens and a prism, treated against disturbing reflected light, beveled, reflection-coated, antireflection-coated, and provided with a combination of being polished, provided with the diaphragm, configured as one of the lens and the prism, treated against disturbing reflected light, beveled, reflection-coated, and antireflection-coated.

5. The measuring device according to claim 4, wherein:

in order to achieve one of a beam shaping and a beam guidance, the free end region is at least one of provided with a drop of adhesive and roughened.

6. The measuring device according to claim 1, wherein:

the measuring fiber is a monomode fiber.

7. The measuring device according to claim 1, wherein:

an interferometer design corresponds to one of a classic interferometer, a white light interferometer, and a heterodyne interferometer.

8. The measuring device according to claim 7, wherein:

in order to expand a measuring range, the interferometer corresponds to a multiple-wavelength interferometer.

9. The measuring device according to claim 1, further comprising:

a fiber section arranged in the probe part, the fiber section being preconnected to the measuring fiber, wherein:

an interface between the fiber section and the measuring fiber is utilized as a beam-splitter surface for forming a reflected reference wave and a transmitted measuring wave.

10. The measuring device according to claim 9, wherein:

a connection between the measuring fiber and the fiber section corresponds to a fiber coupler.

11. The measuring device according to claim 10, further comprising:

a remote demodulation interferometer; and

a short-coherent light source that is one of positioned in a modulation interferometer that is remote from the probe part and linked thereto via the optical fiber and positioned in the probe part, which is then linked via the optical fiber to the remote demodulation interferometer, wherein:

a coherence length of the short-coherent light source is shorter than one half of a difference between a path length of a reference wave and a path length of a measuring wave.

12. The measuring device according to claim 11, further comprising:

an additional optical fiber; and

a fiber beam splitter, wherein:

light from the short-coherent light source is channeled via the additional optical fiber and the fiber beam splitter into the fiber section and, once the point of measurement is illuminated, out of the fiber section into the optical fiber.

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~~12.~~ 13. The measuring device according to claim 1, wherein:

the probe part includes:

a fixed probe part, and

another probe part, rotationally mounted therein, that is rotatable with the measuring head.

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